This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently amended) A fabrication method for a micro-electro-mechanical system (MEMS)-based fuel cell using a fuel and an oxidant, the method comprising the steps of:

a) providing a single unitary substrate;

b) depositing an electrolyte upon the substrate;

c) depositing and patterning a cathode in contact with the electrolyte;

d) depositing and patterning an anode spaced apart from the cathode and in contact with the electrolyte; ~~and~~

e) forming a reaction chamber extending over and contiguous with at least a portion of at least one of the cathode and anode, the reaction chamber including at least one integral manifold for at least one of the fuel and oxidant; and

f) removing a portion of the substrate under the anode and cathode, selectively thinning the substrate and leaving a membrane portion of the substrate, the membrane portion supporting the anode and cathode.

2. (Currently amended) The method of claim 1, further comprising the step of:

~~f~~ g) patterning the electrolyte.

3. (Original) A fuel cell made by the method of claim 1.

4. (Currently amended) The method of claim 1, wherein the reaction chamber extends over at least the entire anode.

5. (Original) The method of claim 1, wherein the electrolyte-depositing step b) comprises depositing a solid-oxide electrolyte.

6. (Canceled)

7. (Currently amended) The method of claim 1, wherein the reaction-chamber-forming step e) comprises the substeps of:

i) depositing a layer of sacrificial material;

ii) patterning the sacrificial material;

iii) covering the sacrificial material with a ~~suitable~~ second material to form a chamber roof; and

iv) removing the sacrificial material.

8. (Currently amended) The method of claim 7, wherein the ~~suitable~~ second material is an electrolyte.

9. (Currently amended) The method of claim 7, wherein the ~~suitable~~ second material is a non-electrolyte.

10 – 15. (Canceled)

16. (Original) The method of claim 1, wherein the steps are performed in the order recited.

17. (Currently amended) The method of claim 1, wherein the electrolyte-depositing step b) is performed after reaction-chamber-forming step e).

18 – 28. (Canceled)

29. (Currently amended) The method of claim 1, further comprising the step of:

~~g~~ h) forming a first opening through the substrate under the reaction chamber, the first opening communicating with the reaction chamber.

30. (Currently amended) The method of claim 29, wherein the first opening is adapted for flow of at least one of the fuel and oxidant into the reaction chamber by forming the first opening in communication with a source of fuel or oxidant respectively.

31. (Currently amended) The method of claim 29, further comprising the step of:

~~h~~ i) forming a second opening through the substrate under the reaction chamber, the second opening communicating with the reaction chamber.

32. (Currently amended) The method of claim 31, wherein the second opening is adapted for flow of at least one of the fuel and oxidant into the reaction chamber by forming the first opening in communication with a source of fuel or oxidant respectively.

33. (Currently amended) The method of claim 31, wherein the second opening is adapted for exhaust flow of at least one of depleted fuel and depleted oxidant out of the reaction chamber by forming the first opening in communication with an exhaust manifold.

34. (Currently amended) The method of claim 31, further comprising the step of:

j k) forming a third opening through the substrate under the reaction chamber, the third opening communicating with the reaction chamber.

35. (Currently amended) The method of claim 34, wherein the third opening is adapted for exhaust flow of at least one of depleted fuel and depleted oxidant out of the reaction chamber by forming the first opening in communication with an exhaust manifold.

36. (Currently amended) A fabrication method for a micro-electro-mechanical system (MEMS)-based fuel cell using a fuel and an oxidant, the method comprising the steps of:

a) providing a single unitary substrate;

b) depositing an electrolyte upon the substrate;

c) depositing and patterning a cathode in contact with the electrolyte;

d) depositing and patterning an anode spaced apart from the cathode and in contact with the electrolyte;

e) forming a first reaction chamber extending over and contiguous with at least the anode, the first reaction chamber including an integral manifold for the fuel;

f) forming a second reaction chamber extending over and contiguous with at least the cathode, the second reaction chamber including an integral manifold for the oxidant;

g) removing at least a first portion of the substrate under the anode and cathode, leaving a thinner second portion forming a membrane portion, the membrane portion supporting the anode and cathode;

h) forming a first opening through the substrate under the first reaction chamber, the first opening communicating with the first reaction chamber,

whereby the first opening is adapted for flow of fuel into the first reaction chamber; and

~~i~~ j) forming a second opening through the substrate under the second reaction chamber, the second opening communicating with the second reaction chamber, whereby the second opening is adapted for flow of oxidant into the second reaction chamber.

37. (Original) The method of claim 36, wherein the steps are performed in the order recited.

38. (Original) A fuel cell made by the method of claim 36.

39. (Currently amended) The method of claim 36, further comprising the step of:

~~j~~ k) patterning the electrolyte.

40. (Original) The method of claim 36, wherein the membrane portion has a periphery, and the membrane portion is supported around its entire periphery.

41. (Original) The method of claim 36, wherein at least part of the membrane portion is removed so as to leave the membrane portion cantilevered.

42 – 64. (Canceled)

65. (New) The method of claim 7, wherein the second material is selected from the list consisting of silicon oxide, silicon nitride, silicon oxynitride, silicon carbide, aluminum oxide, a spin-on-glass (SOG) compound, a polyimide, a photopolymer, an electrolyte material, and combinations thereof.